



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1966

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

W6IFE Newsletter

President: **Doug Millar, K6JEY** 2791 Cedar Ave Long Beach, CA 90806 562-424-3737
doughhelen@moonlink.net

Vice President: **Dick Bremer, WB6DNX** 1664 Holly St. Brea, CA 92621 714-529-2800 rabremer@juno.com

Recording Sec: **Mel Swanberg, WA6JBD** 231 E Alessandro Blvd Riverside, CA 92508 909-369-6515
swanberg@pe.net

Corresponding Sec: **Kurt Geitner, K6RRA** 213 Main St. #5 Seal Beach, CA 90740 310-718-4910
k6rra@gte.net

Treasurer: **Dick Kolbly, K6HIJ** 26335 Community Barstow, CA 92311 760-253-2477
rkolbly@compuserve.com

Editor: **Bill Burns, WA6QYR** 247 Rebel Rd Ridgecrest, CA 93555 760-375-8566 bburns@ridgecrest.ca.us

Webmaster Chip Angle, N6CA

ARRL Interface Frank Kelly, WB6CWN 1111 Rancho Conejo Blvd. #501 Newbury Park, CA 91320
805-499-8047 fk@event1.com

FCC Interface Dave Laag, K6OW 11614 Indian St. Moreno Valley, CA 92557 909-924-1517

W6IFE License Trustee Ed Munn, W6OYJ 6255 Radcliffe Dr. San Diego, CA 92122 619-453-4563
edmun@compuserve.com

The **7 June 2001** meeting of the SBMS will have Doug, K6JEY and Bill, WA6QYR talk about GPS and frequency measurement projects. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>.

Last meeting Bill, WA6QYR talked about his 2304 MHz transverter project using previous 2 GHz communication system parts. Schematics and data were provided in last month's newsletter. Dick, WB6DNX had samples of "Anderson" power connectors to show and gave the point of contact as Ken Mirabella, KM6YH in La Habra at 714-570-3303 401 S Harbor blvd F320 or kjm@powerwerx.com or www.powerwerx.com. Welcome to new member Herb Holeman, W7ZF of Bellevue, WA. 21 people were present.

Badges- the following badges are available from Dick, K6HIJ—AC6RM, Martin; AD6QL Carl; AL7EB Ed; K0BGL, Dale; K6ENS, Charles; KC6TFS, John; KE6BAA, Ed; KE6RCI, Eric; KF6HQC, Fred; KN6VR,

Jeff; N2LIV, Bruce; N6DN, Paul, N6LL, Paul; NN6W, Gary; W6KL, Dave; W6ORG, Tom; W6ZKZ, Vince; W7CS, Chuck; W9DHK, Peter; WA5DJJ, Dave; WA6WAK, Charles; WA6YOJ, Gene; WD4MUO, John; WQ6S, Steve.

Dues Due dates- With the large group of members due in April and some confusion, please check the date following your call on the mail label to make sure your latest dues payment has been entered correctly. Bill

PREZ SEZ The big buzz in EME is that several stations are working and succeeding in 24 GHz EME. I was sort of amused that one of the stations was wondering if clouds were bothering his signals! Obviously a person with not too much terrestrial experience on that frequency. Nevertheless it is an exciting possibility and a tremendous technical achievement. For instance, with that small of a beamwidth on the antennas, they both have to be pointed at the same area of the moon! Apparently they are using Ku band TWT's and moving them up in frequency. 100 watts on 24 GHz? Yikes. As I said a tremendous technical challenge. 10 GHz EME is also active with about a dozen schedules every month on the activity weekend.

A reminder that we have been invited up to San Jose for the 50 MHz and up group's microwave get ready session on July 15. It would be nice if one or more of our members could find their way up. It is also a good chance to do some microwave shopping, as there is stuff available up there that is not down here. The guys up there are also very helpful and friendly.

Got your rig ready? Time to take it out and copy a beacon. That way you can tweak it before the July event. Check your batteries. Recheck how you are protecting your rig against reverse polarity. Assume a 5 year old is hooking up the rig. Is there any way they can get things wrong? I believe Dick Bremer is the contact person for some great connectors that will prevent lots of problems. Doug, K6JEY

Scheduling

9 June ARRL VHF QSO Contest

23 June Field Day

5 July Program Dick, K6HIJ on something

15 July Rig test day in Northern CA, WA6KBL

28 July Antenna/ rig test day in an LA area park following the TRW swap meet.

2 August Program TBD

4 August UHF Contest

18-19 August ARRL 10 GHz and Up Cumulative contest 1st half

6 September Program TBD

8 September ARRL September VHF Contest

15-16 September ARRL 10 GHz and Up Cumulative contest 2nd half

Wants and Gots for Sale

Want cable for thermistor head for HP 432/431, John, KJ6HZ 714-761-0242.

Want manual or info for RF section of HP-8551A Spectrum Analyzer and the HP-441 2 GHz YIG filter, Kurt K6RRA 310-718-4910.

Want HP 1 MHz/ 10 MHz 101A manual or circuit, Dick WB6DNX 714-529-2800.

Got to get rid of-Free 12 inch Conract B&W Monitor, yes tubes. Bill WA6QYR 760-375-8566

Activity reported at the 3 May SBMS meeting- Dick, WB6DNX is working on his Qualcomm rig and had a "what is it?" to share at the meeting; Frank, WB6CWN has a new 10 GHz LO and had a new AAA map book to share; Larry, K6HLH has been working on a new 2.3 GHz preamp for his tower; Sam, K6VLM had the 1296 to 2304 translator for the new Heaps Pk beacon/translator to show. Jim, K6ML had some contacts on 1296 MHz; Dick, K6HIJ worked on a 24 GHz switch design; Peter, K6PTL bought a 10 GHz attenuator; Chip, N6CA put some pictures on the web site of their DXpedition, is collecting parts for an array of 180 element 1296 MHz antennas for the June contest from a Mexico site in DL29I with Jack, and several others who will cover 6 mtrs to 24 GHz with all modes including the new digital ones; Ed, W6OYJ will be on the 1296 MHz spring sprints and had built one of the Qualcomm Noise Figure sources; Kerry, N6IZW now has a 5 GHz rig built into the San Diego Microwave Group simplex repeater covering inputs on 2 mtr, 1296 MHz and 10 GHz for the Monday night 9 pm nets, He had mailed out hardware for several groups around the USA to build microwave repeaters/beacons; Chris, N9RIN did some 10 GHz transverter work; Kurt, K6RRA helped Doug test some 8839 1200w amplifiers and heard echoes from the moon; John, KJ6HZ has a new set up of test equipment; Phil, K6COY collected stuff; Bob, W6SYA had some health problems and is better now, did some 10 GHz contacts; Mel, WB6JBD got a MACOM 10 GHz transverter and tuned up a brick; Ken, WB6DTA has a 1700w inverter in his motor home; Ed, K6ODV had some 10 GHz contacts; Bill, WA6QYR has been working on his version of the GPS frequency reference that appeared in the 1998 QST; Gary, K6KVC has a 10 ft dish available; Dave, WA6CGR is ready for contests with gear from 160 meters through 24 GHz all mode plus digital ones.

2 GHz transverter feedback---Hi Bill, I just talked with ICM and they are quoting \$53.60 for their crystals for the Farinon Bricks, using the part number that you gave me. The gal was not helpful at all about prices or quoting on other crystals. Got to try something else, that is too much. 73, Chuck&emdash;well it looks like the Qualcomm synthesizers are the way to go for LO from last months tech talk.

EME! What an exciting thing to hear for the first time! I went on the moon on 432.040 tonight at about 1 kW output and heard my echoes right off. I let my wife send the first words, which were her name, and she was excited. It has been a lot of work, but that sure makes it worth it. A red-letter day at K6JEY. Thanks again to all those who have helped. Doug, K6JEY 70 cm 4x25eI K1FO's, .22db NF, 1100w DM03wt

More EME- Ed, W6OYJ reported at the May meeting that Paul, WA6PY is now on 10 GHz EME from the San Diego area.

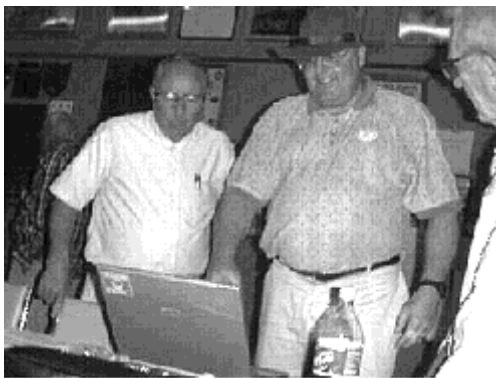
The Mt. Vaca X-Band Beacon was returned to the site yesterday, April 28, and is operating again at full power. Ron, K6GZA, replaced the two last output devices; several burned bias resistors as well as locating a cold solder joint and re-tuning the microstrip all in the 1-watt power amp. What little power that was feeding the antenna had to be leakage within the power amp box. Frequency was measured at 10368.324995 MHz. Drift rate is +1 Hz per month. The 12V power supply was replaced with a switching supply, the box now runs cooler. Stats Update: Call Sign: W6ASL/BCN; Frequency: 10368.325 MHz;

Grid Square: CM88WJ; Power: 1 Watt; Antenna: 10 db Slot Omni H-Pol; Elevation: 2776 Feet AMSL

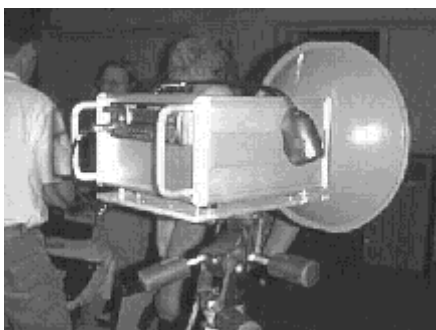
Northern California is now ready for the Rovers in August and September! 73...Jim W6ASL

Another tune up party. Dear Doug Millar and all interested in microwaves, I was just finishing the reservations for our annual picnic when I received your email about a joint get-together of the SBMS and the San Diego group. We, the 50 MHz and UP Group of N. Calif, will be having our annual picnic on Sunday July 15 in the very beautiful and private park owned by National Semiconductor in Sunnyvale, CA. If you are open to combining efforts, we could also reserve a large meeting room that is a right next to the park. After lunch we could walk to the room and have a complete tune-up and measurement session. Everyone and their families are

welcome. We would need to know an idea of how many to expect so that we could tell Nat. Semi. how much of the park we need to reserve. 73, Jeffrey Pawlan, WA6KBL.



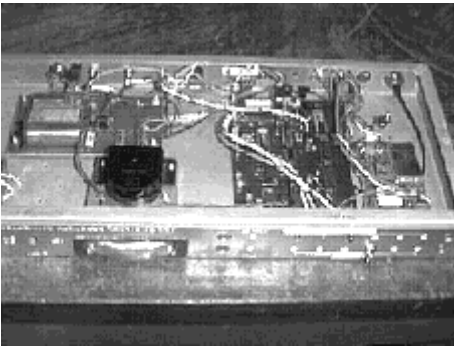
At last meeting Dave, WA6CGR (center) was showing ED, W6OYJ left, and Jim K6ML right, some of the digital transmission modes that are now available off the net. Dave plans to use the modes to push microwave DX distances during the June contest.



This is one of the later microwave rigs built by Dave, WA6CGR. This 10 GHz rig has a built-in IF radio and is easily carried to hill tops with tripod and small gel-cell battery. Dave was demonstrating the connection to a local beacon during the meeting.



Kerry, N6IZW (center) had brought in some more Qualcomm parts to the May meeting. Kerry is explaining the features of one of the later small "gold" boards which can be modified into a complete 10 GHz transverter. Listening to him are left to right, Kurt, K6RRA, John KJ6HZ, and Chris, N9RIN. Thanks to Kerry's dumpster diving a number of hams across the USA are now on 10 GHz and some other microwave bands. New microwave beacons are beginning to appear thanks to Kerry.



This is Bill's GPS Based Frequency Standard based upon the Brooks Shera article in the July 1998 QST. On the left is an Ovenaire Oak Frequency Control VCXO that operates at 10 MHz with a TTL output signal. The power to the VCXO is regulated by 12 v and 5v three terminal regulators. The control voltage comes from the controller board just like the article. Bill used the A&A Engineering circuit board populated with Mouser and Digikey parts and the PIC microprocessor and DAC chips from Shera. The A&A controller board is in the center of the box. To the right of the controller is the Motorola Oncore UT-plus OEM GPS board purchased from Synergy Systems LLC PO Box 262250 San Diego, CA 92196 858-566-0666. The assembly has an RS-232 port to send the PIC phase information to a dumb terminal or using the toggle switch let a computer communicate to the GPS board in Motorola Binary. There is a set of 3 LEDs in the front panel that let one check the status of the assembly. One blinks at a 2 second rate to let you know the 1 pps heartbeat from the GPS board is OK. The other two LEDs help in the set up mode or provide comfort during operation that the system is OK. The power source for this assembly is an older computer power supply providing 15v and +5v isolated which I inverted and adjusted to $\pm 6.5v$. The DAC output of the controller has a range of $\pm 3v$. Using resistive voltage dividers to ratio the control of the DAC to your individual VCXO allows most any VCXO to be controlled, assuming it is stable in the first place.

In an email note from Brooks Shera-"The VCXO requirements are hard to define. The main problem would be if the VCXO jumps or changes freq too fast for the controller to keep up with it. The controller was designed to do the best job it could is using the GPS clocks as a freq standard so that a local crystal oscillator would compare in accuracy to a Rb or Cesium standard. This means running at $N=5$ or above and that requires a decent temperature-controlled crystal. A poorer crystal can be used but only at the lower N values.

BTW, some guys at HP have compared my controller (driving an HP10811VCXO) with an improved version of the HP 58503A GPS-based freq. standard (about \$6K). They used a pair of Cesium standards at HP (Agilent) as the reference. They found the our little circuit was just as good as the HP and a bit better in some areas. Needless to say, I was quite pleased!

Re: how many controllers in operation. I don't know, but I have programmed more than 300 PICs myself. I don't know how many folks programmed their own, but I get email from many guys that have done

that. I expected that 3 or 4 months after the article was published (July 98) that interest would die away. But actually it seems to have increased as word slowly spreads due to local publications like your newsletter. I now get as much email from Europe, Japan, Australia, etc as from the US. Regards, Brooks



An early Corona picture of Vern Lieb, W6SDE atop his newly installed windmill tower from which he worked SoCA microwavers. Photo from K6MBL files. San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast. Dues are \$15 per year which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555, bburns@ridgecrest.ca.us, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

San Bernardino Microwave Society newsletter

247 Rebel Road

Ridgecrest, CA

93555

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